



State of California
Department of Water Resources

PROPOSITION 50 DESALINATION GRANTS– 2006 FUNDING CYCLE

STAFF FUNDING RECOMMENDATION

(June 12, 2006)

Desalination is gaining considerable attention from scientists, resource planners, policy-makers, and other stakeholders. The main driving force for this renewed interest in water desalination is the remarkable technological advancement in desalination processes, which has recently led to a much lower cost of desalinated water than was previously attainable.

In 2003, the California Water Desalination Task Force was convened by the California Department of Water Resources (DWR) pursuant to Assembly Bill 2717 to look into potential opportunities and impediments for using brackish water and oceanwater desalination in California, and to examine what role, if any, the State should play in furthering the use of desalination technology. One of the primary recommendations was that economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs.

The California Desalination Task Force identified the potential water supply benefits associated with the increased use of desalinated water as well as the challenges facing California in regard to large scale desalination use. In this context, DWR will continue its efforts to provide technical and financial assistance to pursue this important and emerging water supply strategy.

In November 2002, California voters passed Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002. Chapter 6(a) of Proposition 50 (Water Code Section 79545(a)) authorized DWR to administer a \$50 million desalination grant program. The grant program aims to assist local public agencies with the development of new local potable water supplies through the construction of feasible brackish water and oceanwater desalination projects and help advance water desalination technology and its use by means of feasibility studies, research and development, and pilot and demonstration projects.

This is the second round of funding under this grant program. DWR has carried out the first round during FY 2004-2005 by awarding \$24.75 million to 24 different projects. DWR released the second round draft 2006 desalination Proposal Solicitation Package (PSP) for public comments on October 13, 2005. Two public workshops to provide information about the draft PSP and to describe the application and review processes were subsequently conducted in Sacramento and in San Diego. The final PSP was released on January 26, 2006 and an informational public workshop was conducted in Sacramento on February 10. Approximately \$21.5 million in grants on 50% cost share is available for this funding cycle to be disbursed

to new water desalination projects that help generate new or alternate potable water supply and to help advance desalination technologies.

Entities involved with water management activities including: cities, counties, joint power authorities, public water districts, universities and colleges, tribes, nonprofit organizations, watershed management groups, State agencies, and federal agencies were eligible to apply.

The Department received 49 applications (proposals) by the due date of Friday March 24, 2006. The applications consisted of 12 construction project proposals, 17 pilot proposals, 13 research and development project proposals, and 7 feasibility study proposals. The total funds requested by these applications amount to approximately \$57.5 million while the total cost of the 49 proposed projects is \$543.5 million.

The applications were evaluated by an independent 22-member review panel comprised of members representing local, State, and federal agencies, as well as other stakeholders and experts in technical, environmental and economical aspects. On May 28, the technical review and ranking of the applications were completed. A State Agency Desalination Funding Team representing DWR, Department of Health Services, Energy Commission, Department Fish and Game, the State Water Resources Control Board appointed by DWR met on May 30 and selected the applications to be recommended to receive funding based on the Review Panel's scores and recommendations. The Team recommended the amount of funding to be granted for each individual application and splitting the available funds of \$21.5 million to support 23 different projects.

A ranking list of the reviewed projects as recommended by the Desalination Review Panel and adopted by the State Agency Desalination Funding Team is provided in Attachment A.

On June 23, DWR is conducting a public workshop to provide information about the selection process, announce the projects recommended for funding, and review the award contracting process. DWR also opened a comment period on the Draft Staff Funding Recommendation until June 26 ([DWR News Release, June 12, 2006](#)).

Based on the review process as presented above, DWR Staff is recommending that the available \$21.5 million under this desalination grant cycle be used to fund 23 different projects including: 3 constructions, 9 pilots and demonstrations, 7 research and development projects, and 4 feasibility studies. A listing of all the 23 projects recommended for funding are presented below. Summaries of these projects can be viewed at http://www.owue.water.ca.gov/recycle/DesalPSP/Summaries_Recommended_2006.pdf.

RECOMMENDED FUNDING DISTRIBUTION BY PROJECT CATEGORY

Project Category	Number of Awarded Projects / Total Applications Received	Awarded Projects Total Cost	Awarded Grant Amount	State Share to Total Cost
Construction Projects	3/12	\$43,015,000	\$9,000,000	20%
Feasibility Studies	4/7	\$1,463,000	\$724,000	49%
Pilots & Demonstrations	9/17	\$22,873,787	\$8,954,577	39%
Research & Development	7/13	\$7,951,510	\$2,860,964	36%
Total	23/49	\$75,303,297	\$21,539,541	28%

PROPOSED 2006 FUNDING AWARDS

CONSTRUCTION PROJECTS (3 awarded projects out of 12 applications)

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested	Awarded Grant
1	C-2006-04	East Bay Municipal Utility District	Low Energy Application of Desalination (LEAD) Project	\$14,640,000	\$3,000,000	\$3,000,000
2	C-2006-07	City of Sand City	Sand City Water Supply Project (SCWSP)	\$8,375,000	\$3,000,000	\$3,000,000
4*	C-2006-08	City of Oxnard, Water Division	GREAT Program Desalter - Blending Station No. 1	\$20,000,000	\$3,000,000	\$3,000,000
Subtotal				\$43,015,000	\$9,000,000	\$9,000,000

* Project ranked 3 was not recommended for funding as proposed work is expected to be completed prior to the expected grant awards.

FEASIBILITY STUDIES (4 awarded projects out of 7 applications)

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested	Awarded Grant
1	F-2006-03	Sweetwater Authority	Otay River Basin Brackish Groundwater Desalination Study, Phase 1	\$499,000	\$242,000	\$242,000
2	F-2006-01	City of Arroyo Grande	South San Luis Obispo County Desalination Funding Study	\$90,000	\$45,000	\$45,000
3	F-2006-05	San Diego County Water Authority	Feasibility Study of a Regional Concentrate Conveyance Facility in San Diego County	\$500,000	\$250,000	\$250,000
4	F-2006-06	City of Oxnard, Water Division	Blending Station No. 3 Desalter	\$374,000	\$187,000	\$187,000
Subtotal				\$1,463,000	\$724,000	\$724,000

PILOTS AND DEMONSTRATION PROJECTS (9 awarded projects out of 17 applications)

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested	Awarded Grant
1	P-2006-05	East Bay Municipal Utility District	Bay Area Regional Desalination Project	\$1,898,600	\$949,300	\$949,300
2	P-2006-08	Municipal Water District of Orange County	Test Slant Well - Pilot Plant Treatment and Testing Phase	\$4,171,226	\$1,500,000	\$1,500,000
3	P-2006-11	Indian Wells Valley Water District	Pilot Testing of Zero-Liquid-Discharge Technologies Using Brackish Groundwater for Inland Desert Communities	\$1,189,000	\$578,500	\$578,500
4	P-2006-01	Los Angeles Department of Water and Power	Seawater Desalination Pilot Project	\$2,877,780	\$1,224,300	\$1,224,300
5	P-2006-12	Board of Water Commissioners of the City of Long Beach	Mitigating Water Quality Effects of Desalinated Seawater	\$2,270,000	\$1,000,000	\$1,000,000
6	P-2006-07	Bureau of Reclamation, U.S. Department of Interior	Vertical Tube Evaporator Geothermal Desalination Demonstration Project	\$3,693,500	\$1,500,000	\$1,318,605
7	P-2006-04	Affordable Desalination Collaboration	Optimizing Seawater Reverse Osmosis for Affordable Desalination	\$2,368,437	\$1,175,237	\$1,000,000
8	P-2006-14	City of Camarillo	City of Camarillo Brackish Water Desalination Pilot Study	\$767,744	\$383,872	\$383,872
10*	P-2006-10	City of Avalon	Catalina Large Diameter Membrane SWRO Energy Reduction Project	\$3,637,500	\$1,500,000	\$1,000,000
Subtotal				\$22,873,787	\$9,811,209	\$8,954,577

* Applicant of the project ranked 9 has been awarded grants for two other projects under this funding program.

RESEARCH AND DEVELOPMENT PROJECTS (7 awarded projects out of 13 applications)

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested	Awarded Grant
1	R&D-2006-07	West Basin Municipal Water District	Critical Raw Water Quality Issues Unique to Seawater: Marine Phytoplankton Blooms, their Associated Biotoxins, and Transient Urban Stormwater Inputs	\$1,245,800	\$496,483	\$496,483
2	R&D-2006-10	Bureau of Reclamation	Development of New Chlorine-Resistant Reverse Osmosis membranes	\$2,554,394	\$498,679	\$498,679
3	R&D-2006-09	University of California, Los Angeles	Advanced Monitoring, Optimization, and Control Technologies for High-Efficiency Membrane Desalination	\$1,068,256	\$500,000	\$500,000
4	R&D-2006-08	Colorado School of Mines	Novel Hybrid Membrane Desalination Process with Minimal Pretreatment and Concentrate	\$1,071,702	\$499,957	\$499,957
5	R&D-2006-06	Sweetwater Authority	Zero Discharge Solar Distillation Research and Development Project	\$990,800	\$481,500	\$481,500
6	R&D-2006-13	Lawrence Livermore National Laboratory	Desalination Using Carbon Nanotube Membranes	\$749,345	\$249,345	\$249,345
7	R&D-2006-04	Montara Water and Sanitary District	Subsurface Intake Filter Technology Evaluation	\$271,213	\$135,000	\$135,000
Subtotal				\$7,951,510	\$2,860,964	\$2,860,964
				Total Cost of Awarded Projects	Funds Requested by Grantees	Awarded Grants
GRAND TOTALS				\$75,303,297	\$22,396,173	\$21,539,541

This funding recommendation provides 48 percent of the fund to brackish water desalination projects and 52 percent to ocean/bay water desalination related projects with a statewide geographically balanced distribution. See map showing the geographical distribution of the projects recommended for funding at http://www.owue.water.ca.gov/recycle/DesalPSP/Geographic_Dist2006.pdf.

With these proposed awards, the State is funding well documented desalination construction projects with high potentials of success. Three construction projects will help create new water from the ocean/bay and unusable brackish groundwater to help local agencies meet their current or future water shortages through feasible desalination projects, which in turn, will create regional and statewide benefits. All applicable laws and concerns will be addressed before the implementation of the awarded projects. This implements Proposition 50 provisions that authorize the construction projects to benefit from this grant funding, allowing the State to have access to data, knowledge, and experience gained as a result of implementing the awarded projects and make knowledge available to other potential projects. The State is supporting feasible desalination projects while working toward meeting water supply benefits projected by the California Desalination Task Force and the 2005 California Water Plan Update. These funding awards are consistent with principles outlined in the PSP process of encouraging the development of all practical brackish water as well as ocean/bay water desalination technologies.

In the event an applicant declines the award for any reason, DWR reserves the right to reallocate the funds to other projects in the funding list or to not use the funds in this funding cycle.

REVIEW PANEL RANKING OF APPLICATIONS**PROPOSITION 50 Water DESALINATION GRANTS - 2006 Funding Cycle**
*(Highlighted are projects recommended for funding)***Construction Projects**

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested
1	C-2006-04	East Bay Municipal Utility District	Low Energy Application of Desalination (LEAD) Project	\$14,640,000	\$3,000,000
2	C-2006-07	City of Sand City	Sand City Water Supply Project (SCWSP)	\$8,375,000	\$3,000,000
3*	C-2006-10	Irvine Ranch Water District	Irvine Desalter Project and South Irvine Brine Line	\$36,600,000	\$1,000,000
4	C-2006-08	City of Oxnard, Water Division	GREAT Program Desalter - Blending Station No. 1	\$20,000,000	\$3,000,000
5	C-2006-11	Marin Municipal Water District	Bay Water Desalination Production and Distribution Project	\$26,200,450	\$3,000,000
6	C-2006-01	West Basin Municipal Water District	C. Marvin Brewer Desalter Enhancement Project	\$4,487,560	\$2,243,780
7	C-2006-02	Water Replenishment District of Southern California	Goldsworthy Desalter Expansion	\$16,088,150	\$3,000,000
8	C-2006-09	Marina Coast Water District	MCWD Urban Water Augmentation Plan Seawater Desalination Facility	\$21,129,300	\$3,000,000
9	C-2006-05	Carlsbad Municipal Water District	Carlsbad Desalination Project	\$294,000,000	\$3,000,000
10	C-2006-12	Cambria Community Services District	Cambria Desalination Project - Design and Construction	\$17,450,000	\$3,000,000
11	C-2006-06	Calleguas Municipal Water District	Calleguas Regional Salinity Management Project - Brine Line Phase 1C	\$19,000,000	\$3,000,000
12	C-2006-03	San Diego County Water Authority	Detailed Design of the Encina Regional Seawater Desalination Facility	\$12,000,000	\$3,000,000
Subtotal				\$489,970,460	\$33,243,780

* Project not recommended for funding as proposed work is expected to be completed prior to the expected grant awards.

Feasibility Studies

Rank	DWR ID**	Applicant	Project	Total Cost	Funds Requested
1	F-2006-03	Sweetwater Authority	Otay River Basin Brackish Groundwater Desalination Study, Phase 1	\$499,000	\$242,000
2	F-2006-01	City of Arroyo Grande	South San Luis Obispo County Desalination Funding Study	\$90,000	\$45,000
3	F-2006-05	San Diego County Water Authority	Feasibility Study of a Regional Concentrate Conveyance Facility in San Diego County	\$500,000	\$250,000
4	F-2006-06	City of Oxnard, Water Division	Blending Station No. 3 Desalter	\$374,000	\$187,000
5	F-2006-04	Otay Water District	Rosarito Regional Seawater Desalination Water Resource Acquisition	\$500,000	\$250,000
6	F-2006-08	Cambria Community Services District	Cambria Desalination Project - Solar / Renewable Power Feasibility Studies	\$250,000	\$125,000
7	F-2006-02	Ventura County Waterworks, District No. 1	Desalting of Brackish Groundwater in South Las Posas Basin	\$375,000	\$187,500
Subtotal				\$2,588,000	\$1,286,500

** F-2006-07 has been reclassified as R&D-2006-13.

Pilots and Demonstration Projects

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested
1	P-2006-05	East Bay Municipal Utility District	Bay Area Regional Desalination Project	\$1,898,600	\$949,300
2	P-2006-08	Municipal Water District of Orange County	Test Slant Well - Pilot Plant Treatment and Testing Phase	\$4,171,226	\$1,500,000
3	P-2006-11	Indian Wells Valley Water District	Pilot Testing of Zero-Liquid-Discharge Technologies Using Brackish Groundwater for Inland Desert Communities	\$1,189,000	\$578,500
4	P-2006-01	Los Angeles Department of Water and Power	Seawater Desalination Pilot Project	\$2,877,780	\$1,224,300
5	P-2006-12	Board of Water Commissioners of the City of Long Beach	Mitigating Water Quality Effects of Desalinated Seawater	\$2,270,000	\$1,000,000
6	P-2006-07	U.S. Department of Interior, Bureau of Reclamation	Vertical Tube Evaporator Geothermal Desalination Demonstration Project	\$3,693,500	\$1,500,000
7	P-2006-04	Affordable Desalination Collaboration	Optimizing Seawater Reverse Osmosis for Affordable Desalination	\$2,368,437	\$1,175,237
8	P-2006-14	City of Camarillo	City of Camarillo Brackish Water Desalination Pilot Study	\$767,744	\$383,872
9*	P-2006-13	University of California Los Angeles	Reducing Seawater Desalination Costs Using Large RO Elements With UF Pretreatment and Process Optimization	\$2,414,086	\$1,202,584
10	P-2006-10	City of Avalon	Catalina Large Diameter Membrane SWRO Energy Reduction Project	\$3,637,500	\$1,500,000
11	P-2006-09	San Diego County Water Authority	Pilot Study for the Proposed San Onofre Regional Seawater Desalination Project	\$2,844,000	\$1,422,000
12	P-2006-17	Cambria Community Services District	Cambria Desalination Project - Pilot Plant	<i>Included in C-2006-12</i>	\$1,375,000
13	P-2006-15	Pajaro / Sunny Mesa Community Services District	Monterey Bay Regional Seawater Desalination Project	\$2,970,000	\$1,485,000
14	P-2006-02	Montara Water and Sanitary District	MWSD Desalination Pilot Plant Project	\$941,530	\$470,000
15	P-2006-16	City of Oceanside Water Utilities Department	Pilot Project of Beach Wells & Reverse Osmosis Technology for Seawater Desalination	\$920,000	\$460,000
16	P-2006-03	Aquarium of the Pacific	Aquarium of the Pacific Desalination Pilot Project for Alternative Water Supply	\$426,000	\$213,000
17	P-2006-06	San Diego State University Research Foundation	Construction of a Brackish Water Geothermal Desalination Demonstration Plant at San Diego State University, Imperial Valley Campus	\$3,000,000	\$1,000,000
Subtotal				\$36,389,403	\$17,438,793

* Applicant has been awarded grants for two other projects under this funding program.

Research and Development Projects

Rank	DWR ID	Applicant	Project	Total Cost	Funds Requested
1	R&D-2006-07	West Basin Municipal Water District	Critical Raw Water Quality Issues Unique to Seawater: Marine Phytoplankton Blooms, their Associated Biotoxins, and Transient Urban Stormwater Inputs	\$1,245,800	\$496,483
2	R&D-2006-10	U.S. Department of Interior, Bureau of Reclamation	Development of New Chlorine-Resistant Reverse Osmosis membranes	\$2,554,394	\$498,679
3	R&D-2006-09	University of California, Los Angeles	Advanced Monitoring, Optimization, and Control Technologies for High-Efficiency Membrane Desalination	\$1,068,256	\$500,000
4	R&D-2006-08	Colorado School of Mines	Novel Hybrid Membrane Desalination Process with Minimal Pretreatment and Concentrate	\$1,071,702	\$499,957
5	R&D-2006-06	Sweetwater Authority	Zero Discharge Solar Distillation Research and Development Project	\$990,800	\$481,500
6	R&D-2006-13	Lawrence Livermore National Laboratory	Desalination Using Carbon Nanotube Membranes	\$749,345	\$249,345
7	R&D-2006-04	Montara Water and Sanitary District	Subsurface Intake Filter Technology Evaluation	\$271,213	\$135,000
8	R&D-2006-11	U.S. Department of Interior, Bureau of Reclamation	Desalination by Forward Osmosis	\$2,554,394	\$498,679
9	R&D-2006-03	Lawrence Livermore National Laboratory	Hazardous Liquid and Solid Waste Residuals from Inland Desalination Operations in California	\$999,293	\$499,288
10	R&D-2006-02	City of Santa Cruz	Optimize Seawater Intake Design and Evaluate Best Technology Screens	\$954,000	\$450,000
11	R&D-2006-05	Lawrence Livermore National Laboratory	Ocean Wave Energy Desalination System (WEDS)	\$1,000,512	\$499,680
12	R&D-2006-01	City of Santa Cruz	Demonstrate Use of HF Radar to Map Source Water for Ocean Desalination	\$584,000	\$234,000
13	R&D-2006-12	Cambria Community Services District	Cambria Desalination Project - Investigations of Three-Channel Reverse Osmosis and Beach Collector Well Intake	\$595,000	\$297,500
Subtotal				\$14,638,709	\$5,340,111
				Total Cost of all Proposed Projects	Funds Requested by all Applicants
GRAND TOTALS				\$543,586,572	\$57,309,184